



Mobile Launcher

Development of a new mobile launcher (ML) is under way at NASA's Kennedy Space Center in Florida for NASA's Space Launch System (SLS), the heavy-lift rocket that will carry astronauts into deep space and provide the cornerstone for America's future human space exploration efforts.

The launcher is designed to support the assembly, testing, check out and servicing of the rocket, as well as transfer it to the pad and provide the platform from which it will launch.

Construction of the ML structure, completed in August 2010, took about two years.

Hensel Phelps of Orlando, Fla., was responsible for phase one of the project,

the construction of the basic structure and facility support systems. The design and prototyping of the necessary ground support equipment (GSE) subsystems are being performed by the Kennedy engineering support contractor. The 355-foot-tall ML structure now will be modified by NASA's Ground Systems Development and Operations Program.

Subsystem designs in work include propellant and gases systems, umbilical arms, electronic control systems, communication systems and access platforms.

NASA will select a structural design contractor early in 2012 and a structural modification construction contractor in 2013.

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The phase two GSE installation design will begin after the structural design is complete. Installation construction will begin in 2015 and will include installation of the propellants and gases, umbilicals and other mechanical and electrical ground support equipment subsystems.

The ML is lighter than the space shuttle mobile launcher platforms making it easier for the crawler-

transporter to pick up the heavier load of the tower and SLS rocket.

The ML made its first move from the park site beside the Vehicle Assembly Building (VAB) to Launch Pad 39B on Nov. 16, 2011. During its time at the pad, data on the ML was collected from structural and functional engineering tests. This data will be used for the next phases



of construction. The ML returned to the VAB park site on Nov. 30, 2011.

BY THE NUMBERS

- Two-story base: 47 feet high, 165 feet long and 135 feet wide
 - Empty weight when outfitted with support equipment: about 10 million pounds
 - Height above the ground when positioned on six steel mounts: 22 feet (in the VAB or launch pad)



- Attach points on the aft skirt: 8 to hold the vehicle on the mobile launcher platform during transfer to the pad and disconnect at liftoff
 - Tower: 40 feet square, 355 feet tall
 - Tower floor levels: every 20 feet for personnel access to vehicle and ground support equipment
 - Approximate weight: 6,750,000 pounds based on data obtained Sept. 30, 2010, using Crawler Transporter 2



WHAT WAS TESTED?

Structural Response: Validated ML structural response on crawler transporter (CT) during rollout and assessed structural dynamic and stiffness issues associated with the coupled systems of the vehicle to the ML and CT.

ML Structural Clearance Survey: Verified structural clearances between pad and ML.

HVAC (heating, ventilation and air conditioning) HVAC Pressurization: Gathered data to support pad B HVAC System and Controls Replacement Study and verified ML tower pressurization capability.

Fire Alarm Testing: Verified fire alarm radio transmission on government-approved VHF two-way frequency. Currently, the ML fire alarm control panel has no remote monitoring connectivity.

Laser Scanning: Performed survey with laser scanners to capture as-built dimensions, system configurations, and equipment layout of ML while at park site and pad to validate models used for operations simulations.

High Definition/3D: Performed 3D imaging and high definition imaging to capture stereoscopic imagery for photogrammetric analysis and captured ML tower deflections while ML is in motion, respectively.



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